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INVITED COMMENTARY

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Heng et al should be congratulated on a well-done study. In addition to validating earlier work by their laboratory and others using similar methods, they have presented important information about interobserver and intraobserver variability. Although one would like to see even lower interobserver variability, it should be emphasized that the authors have explored a "worst-case scenario" in which three of four observers had little training or experience in the method.

Two laboratories now have large clinical series including elective and ruptured abdominal aortic aneurysms (AAAs). Both laboratories have validated that peak wall stress is superior to maximum diameter for estimating rupture risk by a second patient cohort.[1-3] There are, of course, methodologic issues that can be improved. Thresholds for determining low and high risk of rupture differ in the laboratories performing these studies, most likely owing to differing methods of creating the mesh. This demonstrates the importance of consistency in the methods used to create the finite element mesh, and the importance of clinical control series to validate thresholds indicating elevated risk for rupture. Other ongoing areas of investigation include the relative importance of wall strength, calcification, thrombus, and fluid-structure interactions.

Large multi-institutional collaborative efforts are already under way to perform external validation cohorts for the method. A significant amount of work still remains to make these methods widely available to clinicians, but Heng et al should be congratulated on an important step along that pathway.

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